Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 21546

Received at London Office 3 SEP 1941

Date of writing Report 26TH AUG 1941. When handed in at Local Office 27TH AUG 1941. Port of GREENOCK

No. in Reg. Book. Supp. 91015 on the Single / Twin / Triple / Quadruple Screw vessel "EMPIRE JET" Tons Gross 8134 Net 4728

Survey held at GREENOCK Date, First Survey 6TH MAY 1940. Last Survey 19TH AUG 1941. Number of Visits 79

Built at Glasgow By whom built Blythswood S.B. Co. Ltd Yard No. 63 When built 1941

Engines made at Greenock By whom made John G. Kincaid & Co Ltd Engine No. 15133 When made 1941

Donkey Boilers made at Greenock By whom made John G. Kincaid & Co. Ltd Boiler No. 15133 When made 1941

Brake Horse Power 3300 Owners Ministry of Shipping Port belonging to

Nom. Horse Power as per Rule 490 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Trade for which vessel is intended Ocean Going

OIL ENGINES, &c.—Type of Engines Diesel Airless Injection Buchi Sup-d 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 650 lbs Diameter of cylinders 740/1000 Length of stroke 1500/1000 No. of cylinders 6 No. of cranks 6

Mean Indicated Pressure 8.725 Kg/cm²

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1028/1000 Is there a bearing between each crank Yes

Revolutions per minute 110 Flywheel dia. 2089/1000 Weight 2.50 tons Means of ignition Compression Kind of fuel used Diesel Oil

Crank Shaft, ~~Solid forged~~ / ~~Semi built~~ / All built dia. of journals as per Rule as approved / as fitted 505/1000 Crank pin dia. 505/1000 Crank Webs Mid. length breadth 840/1000 Mid. length thickness 310/1000 shrunk Thickness parallel to axis 310/1000 Thickness around eyehole 222.5/1000

Flywheel Shaft, diameter as per Rule ✓ as fitted **Intermediate Shafts,** diameter as per Rule 13.287" as fitted 17" **Thrust Shaft,** diameter at collars as per Rule 13.951" as fitted 17"

Tube Shaft, diameter as per Rule ✓ as fitted **Screw Shaft,** diameter as per Rule 14.60" as fitted 17" Is the tube / screw shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule .745" as fitted .875" Thickness between bushes as per Rule .559 as fitted 21/32" Is the after end of the liner made watertight in the propeller boss Yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner ✓

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓

If two liners are fitted, is the shaft lapped or protected between the liners ✓ Is an approved **Oil Gland** or other appliance fitted at the after end of the tube shaft No If so, state type ✓ Length of Bearing in **Stern Bush** next to and supporting propeller 5'-8"

Propeller, dia. 15'-9" Pitch 12'-0" No. of blades 4 Material Bronze whether Moveable No Total Developed Surface 83. sq. feet

Method of reversing Engines Compressed Air Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication Forced Thickness of cylinder liners 537/1000 Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Yes If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine ✓

Cooling Water Pumps, No. Two Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes

Bilge Pumps worked from the **Main Engines,** No. None Diameter ✓ Stroke ✓ Can one be overhauled while the other is at work ✓

Pumps connected to the **Main Bilge Line** No. and Size One 7"×8"×8" 100 tons/hr and One 8"×8"×10" 120 tons/hr How driven Steam Steam

Is the cooling water led to the bilges No If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements ✓

Ballast Pumps, No. and size One 120 tons/hr **Power Driven Lubricating Oil Pumps,** including Spare Pump, No. and size Two. Spare Main Eng. 90 tons/hr 100 tons/hr

Are two independent means arranged for circulating water through the **Oil Cooler** Yes **Suctions,** connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Machinery Spaces Three @ 3½" 2@2½" Effendam 1@2½" In Pump Room In Holds, &c. Two @ 2½" Effendam two @ 3"

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Two @ 5"

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes

Are all **Sea Connections** fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks Yes

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes Are the Overboard Discharges above or below the deep water line Below

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes

What pipes pass through the bunkers None How are they protected ✓

What pipes pass through the deep tanks None Have they been tested as per Rule ✓

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another Yes Is the Shaft Tunnel watertight None Is it fitted with a watertight door ✓ worked from ✓

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork ✓

Main Air Compressors, No. Two No. of stages Two Diameters 4" & 9¼" Stroke 7½" Driven by Steam

Auxiliary Air Compressors, No. ✓ No. of stages ✓ Diameters ✓ Stroke ✓ Driven by ✓

Small Auxiliary Air Compressors, No. ✓ No. of stages ✓ Diameters ✓ Stroke ✓ Driven by ✓

What provision is made for first Charging the Air Receivers Steam Compressor

Scavenging Air Pumps, No. ✓ Diameter ✓ Stroke ✓ Driven by ✓

Auxiliary Engines crank shafts, diameter as per Rule Ipswich Cert No 4325 as fitted Comp Nos 65998/9. Eng Nos 19010/1 No. Position Engine room platform

Have the Auxiliary Engines been constructed under special survey Is a report sent herewith Ipswich Cert. attached with other certificates

AIR RECEIVERS:—Have they been made under survey Yes State No. of Report or Certificate ✓

Is each receiver, which can be isolated, fitted with a safety valve as per Rule Yes

Can the internal surfaces of the receivers be examined and cleaned Yes Is a drain fitted at the lowest part of each receiver Yes

Injection Air Receivers, No. None Cubic capacity of each ✓ Internal diameter ✓ thickness ✓

Seamless, lap welded or riveted longitudinal joint ✓ Material ✓ Range of tensile strength ✓ Working pressure by Rules ✓ Actual

Starting Air Receivers, No. One Total cubic capacity 750 cu/ft Internal diameter 6'-4" thickness 1 1/32"

Seamless, lap welded or riveted longitudinal joint TR DBS Material S Range of tensile strength 29/33 Ton Working pressure by Rules 368 lbs Actual 356 lbs

IS A DONKEY BOILER FITTED? Yes If so, is a report now forwarded? Yes

Is the donkey boiler intended to be used for domestic purposes only No

PLANS. Are approved plans forwarded herewith for Shafting 5-10-39. Receivers 23-10-39. Separate Fuel Tanks 17-4-40
(If not, state date of approval)

Donkey Boilers 16-10-39. General Pumping Arrangements 24-10-39. Pumping Arrangements in Machinery Space 12-2-40

Oil Fuel Burning Arrangements 2-4-40

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

See Separate list ✓

The foregoing is a correct description,

For JOHN G. KINCAID & CO. LTD.

Director. *Manufacturer.*

Dates of Survey while building

During progress of work in shops— (1940) MAY 6·23 JUNE 5·26 JULY 15·23 AUG. 1·5·8·9·12·20·23·28 SEPT. 2·5·17·18·26 OCT. 8·11·14·21·22·29 NOV. 1·4·15·26 DEC. 11·13·19·29. (1941)

During erection on board vessel— JAN. 6·13·21 FEB. 3·12·21·27 MAR. 12·17 APL. 1·20 MAY 2·13·19·23·28·29 JUNE 2·6·12·13·19·23·24·25·27·30 JULY 2·4·12·14·15·16·18·22·23·24·25·28·30 AUG. 1·5·11·13

Total No. of visits 49

Dates of Examination of principal parts—Cylinders 23/29/5/41 Covers 23/29/5/41 Pistons 14-7-41 Rods 12-7-41 Connecting rods 14-7-41

Crank shaft 14-7-41 Flywheel shaft ✓ Thrust shaft 30-6-41 Intermediate shafts 6-6-41 Tube shaft ✓

Screw shaft 19-5-41 Propeller 19-5-41 Stern tube 26-11-40 Engine seatings 23-6-41 Engines holding down bolts 24-7-41

Completion of fitting sea connections Completion of pumping arrangements 19-8-41 Engines tried under working conditions 19-8-41

Crank shaft, Material S Identification Mark 9588 CNH Flywheel shaft, Material ✓ Identification Mark ✓

Thrust shaft, Material S Identification Mark 9170 CNH Intermediate shafts, Material S Identification Marks 9172 CNH.

Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material S Identification Mark 9120 CNH.

Identification Marks on Air Receivers N° 1606
LLOYDS TEST
556 lbs/□"
W.P. 356 lbs/□"
CNH 29-12-40

Is the flash point of the oil to be used over 150° F. Yes

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with Yes

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo Oil Tanker If so, have the requirements of the Rules been complied with Yes

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with No

Is this machinery duplicate of a previous case Yes If so, state name of vessel DENBYDALE GRT & N° 21284

General Remarks (State quality of workmanship, opinions as to class, &c. These engines have been built under Special Survey in accordance with the Rules & approved plans. The materials and workmanship are sound & good. The machinery has been efficiently installed on board and tested under full working conditions with satisfactory results on a short sea trial

This machinery is eligible in my opinion to be classed in the Register Book with record + LMC 8-41 & Notation Screw shaft CL 2 DB 150 lbs/□"

Certificate (if required) to be sent to

(The Surveyors are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee ..	£ 5 : 0 :	When applied for,	27TH AUG 1941
Special	£98 : 10 :		
Donkey Boiler Fee ...	£22 : 2 :	When received,	29TH AUG 1941
AIR RECEIVER	4 : 4 :		
Travelling Expenses (if any)	£ :		

Charles H. Hunter
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 2 SEP 1941

Assigned -/- LMC 8.41 air hdg
2 DB 150 lbs.